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Engaging Learners' Out-of-class Learning via OoCLI

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***Abstract*—** Successful language learning development is associated with active engagement in out-of-class learning activities. Against this background, the present study proposed Out-of-Class Learning Inventory (OoCLI) to assist teachers in engaging students' out-of-class language learning activities. A total of 65 students responded to the 6-point Likert scale survey and the validity and reliability of the items were analyzed using the Rasch Measurement Model; Rating Scale Model. The results showed that students learn English informally outside of the class. In particular, they have the tendency to use authentic or real-life situations when learning English outside of the class like discussing with friends and using technology as a tool to learn English.

Keywords—OBE, out-of-class learning, inclusivity, Rasch Measurement Model

I. INTRODUCTION

It is worth noting that learning comprises diverse formal and informal setting experiences that complement each other (Colley et al., 2003; National Research Council, 2009). In other words, in-class and out-of-class learning, in which the former is formal, and the latter is informal. Bäumer et al. (2011, p. 92) pointed out that these two settings are viable in building "a complex web of synchronic as well as chronological learning opportunities". With regards to language learning, out-of-class learning has been empirically proven to have positive correlations with language gains (Inozu et al., 2010; Larsson, 2012; Richards, 2009; Sundqvist, 2011). Finding and employing various out-of-class opportunities for learning has been observed in successful language learners (Benson et al., 2003; Borrero & Yeh, 2010). Therefore, assisting language learning in constructing quality out-of-class learning experiences is deemed imperative (Blyth & LaCroix-Dalluhn, 2011; Stickler & Emke, 2011).

It is against this backdrop that the researchers devised Out-of-class Learning Inventory (hereafter, OoCLI) with a twofold purpose; to assist teachers in assessing students making better assessments and to enable students to learn at their peak ability. OoCLI may aid teachers to assess students' out-of-class learning practices, which may bring about enhanced learning processes. Information on students' out-of-class learning practices would be available to the teachers and this may help teachers to use the information in their teaching process. Apart from that, this inventory may serve as a self-assessment tool, in which the students, while answering the inventory may become aware of their out-of-class activities and by extension, assess themselves. This will culminate in creating some awareness among the students about their out-of-class learning practices. In doing so, the inventory is devised to gain access to 'what' (learning content, materials, tasks, etc.) and 'how' (the rate and sequence of learning) students learn outside of the classroom, including their test preparation activities and encountering the challenges faced outside of the class.

II. METHODOLOGY

This study received clearance from the Universiti Teknologi MARA ethical unit and all participants signed a consent form detailing their involvement in the study prior to the data collection. To reiterate, the focus of OoCLI was 'what' (i.e. learning content, materials, tasks, etc) and 'how' (i.e. the rate and sequence) learning was going on outside of the classroom. OoCLI is a 20-item inventory devised using a 6-point reflect me Likert scale, i.e. very untrue of me to very true of me and is divided into 2 sections, namely activities and assessment (see Table 1).

Table 1: Survey sections and items

Sections	Items
Activities	1-10

Assessment	11-20

For the purpose of the present study, ELC231 test battery was chosen as the assessment. Therefore, students who have taken ELC231 in UiTM, Penang Branch Campus, Malaysia, were approached as the respondents. The 20-item inventory was distributed to the respondents and they were informed that their participation was voluntary. An electronic survey, i.e., Google Form was utilized as a platform to disseminate the survey and 65 respondents answered the inventory. To confirm the construct validity of the inventory, the data was analyzed using Winsteps Rasch software version 3.72.1 (Linarce, 2009). According to Baghaei (2008), the Rasch model has been used widely to analyze questionnaires and construct validity. Moreover, data that fitted the model indicates a valid test, in which a construct is underlying the covariance among the items and causes the item responses (Baghaei & Tabatabaee Yazi, 2016; Borsboom, 2008). Therefore, 20 items and 65 participants were subjected to the Rasch analysis to estimate the fit of data to the model.

III. FINDINGS AND DISCUSSION

Before analyzing the responses, 6 criteria for the Rating Scale Model were scrutinized to warrant the effectiveness of this inventory . Table 2 presents the psychometric properties of the OoCLI .

Table 2: Psychometric properties of OoCLI

TABLE 3.2 OUTOFCLASS_WITHRESULTS.xlsx ZOU195WS.TXT Jan 28 13:45 2020
INPUT: 311 PERSON 20 ITEM REPORTED: 311 PERSON 20 ITEM 6 CATS WINSTEPS 3.72.1

SUMMARY OF CATEGORY STRUCTURE. Model="R"

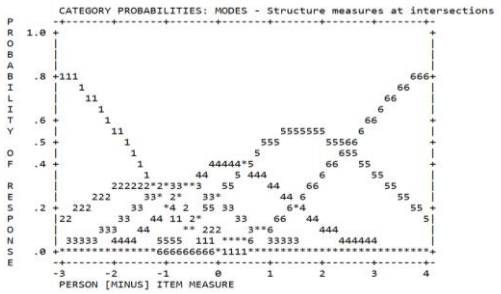
CATEGORY LABEL	SCORE	OBSERVED COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	STRUCTURE CALIBRATN	CATEGORY MEASURE	
1	1	107	2	-.59	-1.26	2.00	2.54	NONE	(-2.80)	1
2	2	166	3	-.63*	-.51	1.04	1.18	-1.31	-1.51	2
3	3	418	7	.07	.22	.89	.88	-1.05	-.69	3
4	4	1292	21	.82	.89	.88	.86	-.57	.16	4
5	5	2648	43	1.57	1.54	.80	.81	.50	1.58	5
6	6	1589	26	2.31	2.29	1.06	1.01	2.44	(3.64)	6

OBSERVED AVERAGE is mean of measures in category. It is not a parameter estimate.

CATEGORY LABEL	STRUCTURE MEASURE	S.E.	SCORE-TO-MEASURE AT CAT.	----ZONE----		50% CUM. PROBABLTY	COHERENCE M->C	C->M	RMSR	ESTIM DISCR	OBSERVED-EXPECTED RESIDUAL	DIFFERENCE	
1	NONE		(-2.80)	-INF	-2.17		30%	6%	2.3410		-1.1%	-1.2	1
2	-1.31	.12	-1.51	-2.17	-1.08	-1.80	42%	31%	1.5443	-.30	-.6%	-1.0	2
3	-1.05	.08	-.69	-1.08	-.30	-1.05	37%	24%	1.1528	.73	-.2%	-.8	3
4	-.57	.05	.16	-.30	.76	-.39	44%	42%	.7305	1.02	.0%	.3	4
5	.50	.03	1.58	.76	2.73	.65	55%	80%	.4293	1.12	.1%	2.3	5

Referring to table 2, the first criterion is acceptable as the observation count is more than 10 for each category. The second criterion can be observed in figure 1, which illustrates the distribution of each category, i.e., the category probability curves. It is interesting to note that category 2 overlaps with category 3. The third criterion is that the measures for each category must be ascending and this is reflected in table 2. The next criterion is the outfit mean square statistics should not exceed 2 logit and, the outfit mean square measure for category 1 is more than 2 logit, i.e., 2.54. Moving on, the fifth criterion is threshold calibration, which should increase with the rating scale, and this can be observed in table 2. Threshold calibration explains the ability to predict a respondent's score. The final criterion is that the difference between thresholds must be at least 1.4 apart and no more than 5 logits apart. This criterion is met although some differences between thresholds are almost 1.4 logits apart and 2 categories have low differences, i.e., category 2 and 3. This is reflected in figure 1, i.e., their peak overlap. Notwithstanding the unmet criteria, it can be concluded that the psychometric properties of OoCLI represent a close enough approximation.

Figure 1: Category probability of OoCLI



Within Rasch analysis, there are two reliability indices, namely item reliability and person reliability. Apart from that, there are also real and model reliability. The model reliability provides measures of the upper limit of the consistency and the real reliability provides measures of the lower limit of the consistency (Boone, et.al. 2014). In Rasch measurement, both item and person reliability are reported to indicate that the items can be measured consistently. The reliability of OoCLI is significant as the person reliability of this scale is .88 with separation index of 2.66 (see table 3) and the item reliability is .98 with separation index of 6.98 (see table 3). Hence, it can be concluded that this inventory is an effective instrument to measure the respondents' out-of-class learning.

Table 3: Person and item reliability of out-of-class learning

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	95.3	20.0	1.44	.31				
S.D.	13.7	.0	1.08	.14				
MAX.	120.0	20.0	6.76	1.83				
MIN.	36.0	20.0	-1.85	.21	.11	-4.3	.11	-4.4

REAL RMSE	.38	TRUE SD	1.01	SEPARATION 2.66 PERSON RELIABILITY .88
MODEL RMSE	.34	TRUE SD	1.02	SEPARATION 3.00 PERSON RELIABILITY .90
S.E. OF PERSON MEAN = .06				

PERSON RAW SCORE-TO-MEASURE CORRELATION = .93
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .93

SUMMARY OF 20 MEASURED (NON-EXTREME) ITEM

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	1481.7	311.0	.00	.07	1.01	-.2	1.00	-.3
S.D.	102.8	.0	.56	.01	.30	3.4	.31	3.5
MAX.	1682.0	311.0	.89	.09	1.62	6.1	1.72	6.9
MIN.	1298.0	311.0	-1.28	.06	.61	-5.1	.60	-5.4

REAL RMSE	.08	TRUE SD	.55	SEPARATION 6.98 ITEM RELIABILITY .98
MODEL RMSE	.07	TRUE SD	.55	SEPARATION 7.42 ITEM RELIABILITY .98
S.E. OF ITEM MEAN = .13				

UMEAN=.0000 USCALE=1.0000
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.99

The item measure for the 20 items of OoCLI is tabulated in table 4 below. The first 11 questions are meant to evaluate the respondents' out-of-class learning practices, including what they learn and how they learn English, i.e., ELC231 outside of their formal classroom. The other 9 items focused on their test preparation.

Table 4: Item measure of OoCLI

ITEM STATISTICS: MEASURE ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	ITEM
2	1298	311	.89	.06	1.11	1.3	1.14	1.6	.60	.66	37.2	42.8	[English books]
7	1302	311	.87	.06	1.21	2.4	1.23	2.6	.59	.66	39.8	42.8	[Newspaper]
5	1317	311	.81	.06	1.10	1.2	1.14	1.6	.59	.65	42.4	43.7	[Grammar quiz]
1	1348	311	.69	.07	1.62	6.1	1.72	6.9	.51	.65	38.5	44.8	[Dictionary]
19	1407	311	.42	.07	1.00	.0	1.03	.4	.60	.64	53.7	46.8	A [use textbooks to prepare for my ELC231 assessment]
8	1457	311	.18	.07	1.12	1.4	1.12	1.4	.60	.62	49.8	48.5	[Communicate in English]
3	1460	311	.17	.07	1.19	2.0	1.25	2.7	.59	.62	47.9	48.5	[Discussion with friends]
6	1472	311	.10	.07	1.57	5.5	1.58	5.8	.55	.62	43.7	49.0	[Instagram]
9	1499	311	-.04	.07	1.07	.8	1.13	1.5	.57	.61	53.7	49.8	[WhatsApp]
13	1499	311	-.04	.07	.77	-2.7	.78	-2.7	.66	.61	58.3	49.8	A [discussions with friends before the tests]
16	1501	311	-.05	.07	.67	-4.1	.65	-4.6	.69	.61	62.5	49.9	A [prepare for essay writing test]
15	1502	311	-.06	.07	.62	-4.9	.60	-5.4	.71	.61	67.3	49.9	Assessment [prepare for reading test]
14	1512	311	-.11	.07	.66	-4.3	.69	-4.1	.67	.60	65.7	50.4	A [prepare when the exam is near]
17	1521	311	-.16	.08	.63	-5.1	.61	-5.2	.70	.60	65.0	50.6	A [prepare for evaluative commentary]
20	1534	311	-.24	.08	.66	-4.3	.69	-4.0	.66	.60	61.8	51.1	Assessment [homework]
12	1538	311	-.26	.08	.80	-2.3	.80	-2.5	.62	.59	62.1	51.3	A [test format]
18	1548	311	-.32	.08	.69	-3.9	.67	-4.3	.69	.59	64.4	51.3	A [prepare for oral commentary]
10	1591	311	-.59	.08	1.21	2.2	1.18	1.1	.60	.57	51.8	53.3	[YouTube]
11	1647	311	-.99	.09	1.30	3.1	1.16	1.7	.61	.54	57.9	55.6	[Listen to English songs]
4	1682	311	-1.28	.09	1.13	1.4	.94	-.6	.57	.52	52.8	59.6	[Google]
MEAN	1481.7	311.0	.00	.07	1.01	-.2	1.00	-.3			53.8	49.5	
S.D.	102.8	.0	.56	.01	.30	3.4	.31	3.5			9.5	4.0	

Based on table 4, it is safe to conclude that the respondents learn English by means of reading outside of the classroom. This is because; items 2 (English books) and 7 (newspaper) display the highest logits; .87 and .89, respectively. Apart from reading, dictionary is also another tool used to learn English outside of the class. This is reflected in item 1 (dictionary), with item measure of .69 logit. It is apparent nowadays that technology has been a tool for learning and the respondents are not exempt as technology, i.e., the Internet has been a tool for them to learn English outside of the class. Five items from this section address this issue, i.e., Google (logit = -1.28), WhatsApp (logit = -.04), YouTube (logit = -.59), grammar quiz (logit = .81) and Instagram (logit = .10). Among the five, grammar quiz has the highest logit, suggesting that the respondents use grammar quiz for learning English more than the other four platforms. The least preferred platform is Google, perhaps because the respondents have the tendency to use more social media rather than a search engine to learn English.

The items addressing the respondents' test preparation explain how the respondents prepare for their test and which test they prepare for. The highest logit (logit = .42) is item 19 (use textbook to prepare for ELC231 assessment) suggesting that the respondents found textbooks to be a useful source for their test preparation. The other test preparation strategies employed by the respondents include preparing when the exam is near (logit = -.11), homework (logit= -.24), test format (logit = -.26) and discussion with friends before test (logit = -.04). This suggests that friends play a major role in the respondents' test preparation. Apart from that, it is common among students to prepare for tests only when it is around the corner. The respondents also use their homework and test format as their test preparation strategy, although the respondents find it quite hard to endorse the item. There are four assessments in ELC231, namely oral commentary, essay writing, evaluative commentary and reading test. The respondents prepare for the four assessments. The highest logit is preparing for essay writing test (logit = -.05), followed by preparing for reading test (logit = -.06), preparing for evaluative commentary (logit = -.16) and preparing for oral commentary (logit = -.32).

In this section, the researchers will shed some light on how teachers can manipulate the data from the inventory to enhance student learning. It is evident in the results that students learn English informally outside of the class. In particular, they have the tendency to use authentic or real-life situations when learning English outside of the class, like discussing with friends and using technology as a tool to learn English. Therefore, teachers may assign students with group work or projects as their out-of-class learning activities. Teachers also may assign case study or problem-based learning to enhance students' higher order thinking skills. Moreover, teachers can incorporate technology in their teaching activities, as well as assigning homework or activities outside of the class that may interest the students, i.e., using technology as a platform to learn. There is an abundance of electronic teaching platforms available, such as Google Classroom, Edmodo, to name a few. A follow- up discussion about the project may be done in the classroom by means of presentation, forum, etc.

It has to be noted that when students are given project work, which has to be done outside of the class, this may culminate in the sought-after skills that the students could practice in their future career. This will then make their learning worthwhile. As students acknowledge that their learning is worthwhile, they could then justify their learning and find a motivation to learn (Brophy, 1999). It has to be noted that the majority of the students felt that the homework given by their teachers is useful in their test preparation. Hence, the researchers deem that teachers may assign students with homework that are related to their test preparation. The inventory helps teachers to gain access to students' learning activities outside of the class, apart from enabling students to self-assess themselves with regards to their out-of-class learning. Upon answering the inventory, teachers may go through the items in the inventory one by one with the students. While discussing the items, teachers may prompt the students to think about their out-of-class learning. This may be followed by encouraging students to learn outside of the class as it will enhance their learning, especially with regards to real-life situations. According to Resnick (1987), in-class learning alone may not be sufficient to prepare students for real-world challenges. Hence, out-of-class learning complements in-class learning as events and objects in physical worlds are openly connected via out-of-class learning. Notably, students of this new age are not dependent on in-class learning as they are found to use various formal and informal resources to support their learning and hence, learning goes beyond in-class language learning contexts (Lai, 2013; Gao, 2010).

IV. CONCLUSION

This inventory can be adapted in other language classes besides English, as well as other classes in general. Teachers may use the inventory electronically, such as Google form as students nowadays are digital natives, in which incorporating technology in learning may excite them. Moreover, when technology is used, it is easier for teachers to analyze the data and hence, swift feedback can be offered. It is noteworthy that teaching in the 21st century is different from the traditional approach. With the implementation of Outcome-based Education (OBE), it is imperative for teachers to use formative assessment to ensure learning happens. This inventory may help teachers to gain more access to students' learning, which may happen outside of the classroom. Apart from that, this inventory may serve as an assessment of learning; a self-assessment, in which students will be aware of their learning activities outside of the class.

To conclude, this inventory may be of help for teachers to enhance student learning. It is also worthy to note that the proposed inventory can be adopted not only in language classrooms, but also across subjects and faculties. Specifically, OoCLI provides information that may help teachers adjust their teaching approaches, teaching tasks, offering formative feedback, etc. in order to ensure better learning outcomes are achieved. Most importantly, as it was highlighted earlier in this study, learning does not only occur inside the classrooms, but outside as well. Therefore, out-of-class learning which points to self-regulation in nature

complements the formal classroom learning. As one of the principles of OBE is authentic assessment, this survey may help teachers evaluate their students' language needs in real life situations and to ensure that all students from every walk of life can succeed in their learning process.

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