Innovations

The Effect of Students' Prior Knowledge Activation on Their EFL Reading Comprehension of Texts of Varying Familiarity

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Abstract
The purpose of this study was to look into the effect of students' prior knowledge (PK) activation on their reading comprehension of texts written in different cultures. The study participants were 88 randomly selected treatment students and 87 randomly selected comparison students. The QUAN-qual embedded mixed method design was employed. The treatment group was provided with reading comprehension activities of varied cultural texts accompanied by cuing and brainstorming, whereas the comparison group continued with its usual reading lesson. The instruments for data collection were the post-test, questionnaire, and group interview. Data were analyzed using descriptive statistics for reliability and normality checks involving KR-21, Cronbach's alpha, and Kolmogorov-Smirnov. Inferential statistics employed the independent t-test, the Wilcoxon signed-rank test, and effect size tests. The results showed that the PKA group outperformed the PKIA group by a significant mean difference of t (173) = 6.06, p.001. At Z(86) = -2.182, p =.05., there was also a significant mean difference between brainstorming and cuing strategies. Among the strategies employed, cuing was found to be more helpful in activating the students' PK related to the familiar text, with a mean rank of 42.76. Conclusions can be drawn that, PK activation improves reading comprehension, and that PK activation using cuing increases with increased text familiarity. Hence, awareness should be given to text writers for the inclusion of PK activation strategies through texts containing cuing cultural expressions. This can simplify complex texts into learner-friendly ones for ease of practice in reading comprehension.

Key-words*: 1.Brainstorming 2. Cuing 3.cultural expressions 4.Prior Knowledge Activation 5.Reading*

1. Introduction

Reading is an essential skill that enables independent understanding. It is a silent activity leading to the independent acquisition of information (Grellet, 1981). Grellet also mentions that reading is an active skill for guessing, predicting, checking, and asking by relating text information to prior information. Grabe (1991) asserts that reading is the most important literacy skill that students use to access massive amounts of information. This assertion encompasses the idea that students engage in independent reading to grasp information on their own.

The independent reading activity inevitably involves the use of prior knowledge (henceforth PK). Effective PK utilization in reading comprehension employs the activation of PK (Johnston & Pearson, 1982; Carrell, 1983). PK activation bridges between previous knowledge and new concept, reminds readers of existing experiences (Erten&Razi, 2009), enables readers to

discriminate between important and unimportant information, and helps them make inferences about non-explicit concepts (Holmes et al., 2009). In addition, Lin (2004) revealed that PK activation, through culturally familiar texts, activates readers' PK to facilitate reading comprehension. In order to encourage students to easily construct new knowledge upon existing knowledge, it is essential to activate their background knowledge related to reading texts. Activation of prior knowledge is important, because students may not know when to apply while possessing the necessary prior knowledge (Ambrose & Lovett, 2014).

These strategies are expected to be included in curriculum design in general, and in student materials and classroom interactions in particular, due to the benefits of improved understanding. The assertion of the incorporation of local values in curricula, in Ethiopian MoE policy (Ministry of Education, 1994) also implies the use of PK in various aspects. In contrast to these, PK is overlooked in reading texts in terms of using contextualized PK activation strategies with target students.

This problem was detected through the researcher's daily practices of observing the freshman students' reading performances, the English language entrance exam at the department level, and related research reports. Reflections on daily student performance revealed poor comprehension, as evidenced by poor performance on assignments and exams. In addition, the department-level reading exam results, for instance, in 2017, showed the majority of the students' scores to be less than 50%. Specifically, among students that sat for the exam, 60% of students in the FBE and engineering departments scored below 50%, including the lowest mark of 4%. In addition, related studies revealed the failure of students in reading comprehension, with a typical example being Simachew's (2019) study, which revealed the students' reading comprehension practice was below expected. Prior to the start of the actual study, the researcher conducted an assessment of high school EFL teachers to better diagnose the presence of reading comprehension failure. The results indicated that their respective students were poor in reading comprehension. It also pinpointed that most textbook reading texts could not cue the students' PK for easy comprehension. For more confirmation of the existence of the problem, the researcher overviewed the target students' English textbook ahead of engaging in the research and integrated the result with the feedback from the assessment of high school teachers. The result indicated that the reading texts and their activities rarely considered cuing of the target students' PK though they involved pre-reading stages.

Having located the problem, the researcher explored the gaps in relevant studies. Among reviewed works in the area of reading comprehension, Mulatu's (2014) local study, conducted at Goro High School, was typically relevant. However, the study did not deal in depth with the effect of PK activation and its strategies.

Hence, this ignorance of PK activation in relation to reading texts prompted the need for the investigation of whether there was or was not an effect of PK activation differences on the target students' reading comprehension in the present study area. This was with respect to reading texts originating from two different local cultures (T1, T2) and a text originating from a foreign culture (T3) against PK activation using brainstorming and cuing strategies. It was intended to determine whether practitioners were correct or incorrect in ignoring students' PK activation on reading comprehension and, finally, to suggest potential solutions.

Research Questions

- Is there mean score significant difference between PK activated group and PK inactivated group of students with respect to T_1, T_2 and T_3?
- Which PK activation strategy more helped the target students' reading comprehension with regard to T_1, T_2 and T_3?

2. Review of Related Literature

2.1. PK Activation Strategies

There are several prior knowledge activation strategies (Yuksel, 2012). According to Yuksel, scholars broadly categorize these PK activation strategies as direct instruction and indirect instruction. Before reading, direct instruction is the first part of the presentation of the reading material (Strangman& Hall, n.d.). Examples include defining difficult vocabulary, translating foreign phrases, and explaining difficult concepts. The indirect instruction involves reflection and recording, brainstorming, discussion, K-W-L, concept map, CONTACT-2, PKTandD, mobilization, prescriptive taking, interpretation of topic-related pictures, and answering questions. Among these, brainstorming and cuing are the most frequently used strategies, according to the literature. Hence, the effects of these two strategies on the target students' reading comprehension were considered in the present study.

2.1.1 Brainstorming

The first prior knowledge activation strategy considered in the present study is brainstorming. Brainstorming is done by the teachers posing new topics to students, and the students try to mention all they know about the topics (Yuksel, 2012). It is done through wh-questions involving who, what, where, and when questions. In a brainstorming strategy, it is possible to identify misconceptions since students freely mention their conceptions that might be wrong or correct. In brainstorming strategy, it is also possible to identify misconceptions since students freely mention their conceptions that might be correct or wrong. Sharafi-Nejad et al. (2016) investigated the impact of brainstorming as a pre-reading strategy on learners' reading comprehension. In the study, 50 Malaysian EFL learners 12-18 years old were selected. Similar proficiency students were selected using a language proficiency test. A brainstorming strategy was delivered to the experimental group, followed by repeated tests for both groups. The result showed that the brainstorming strategy had a positive impact on reading comprehension.

Alhaisoni (2017) investigated the role of PK for native and non-native EFL teachers in terms of EFL reading comprehension, the instructional strategies used to activate students' PK, and the difficulties encountered when activating students' PK. In the dissertation, 63 Aljouf University preparatory year teachers participated. Questionnaire and observation checklists were used to collect data. The result showed that there was strong agreement among the teachers on the use of PK activation for better text comprehension and the use of questioning before, during, and after reading comprehension. The result also identified that the popular PK activation strategies used by the teachers were brainstorming, audio-visual aids, and questioning. Further, the difficulties in the activation of PK, according to the study, were teachers' lack of ability to activate students' PK due to their low level of reading and limited linguistic competence.

2.1.2. Cuing (Use of Key-words or Context)

The other is prior knowledge or a schema-activating strategy through the use of keywords or contexts, as indicated by Cook and cited in Alhaisoni (2017). Cuing is the use of relevant keywords or contexts that stimulate the mind and activate knowledge. Using this strategy, schemas are assumed to be activated in two ways. To begin, a cue is defined as new information from the outside that can be cognitively received and related to previously stored information in memory via retrieval or remembering. This is assimilating new concepts that can be altered or expanded into existing schemas. Second, a cue is stated as new information that can

be represented by a new mental structure. That is, new schemas are created in the absence of existing ones. In practice, the latter way is difficult and time-taking to happen.

PK is credited to the schema theory, which Bartlett established (Iran-Nejad&Winster, 2000). Iran-Nejad and Winster state that the primary factor in the development of schema theory was interest in the influence of PK in terms of perception, comprehension, and remembering. The use of PK in the academy is also highly recommended by scholars (Lin, 2004; Barnes, 2015). However, the mere possession of PK is not enough if it is not activated to minimize students' reading difficulty (Alhaisoni, 2017). Therefore, the researcher decided to investigate the effect of PK activation on the students' reading comprehension based on the following conceptual framework.

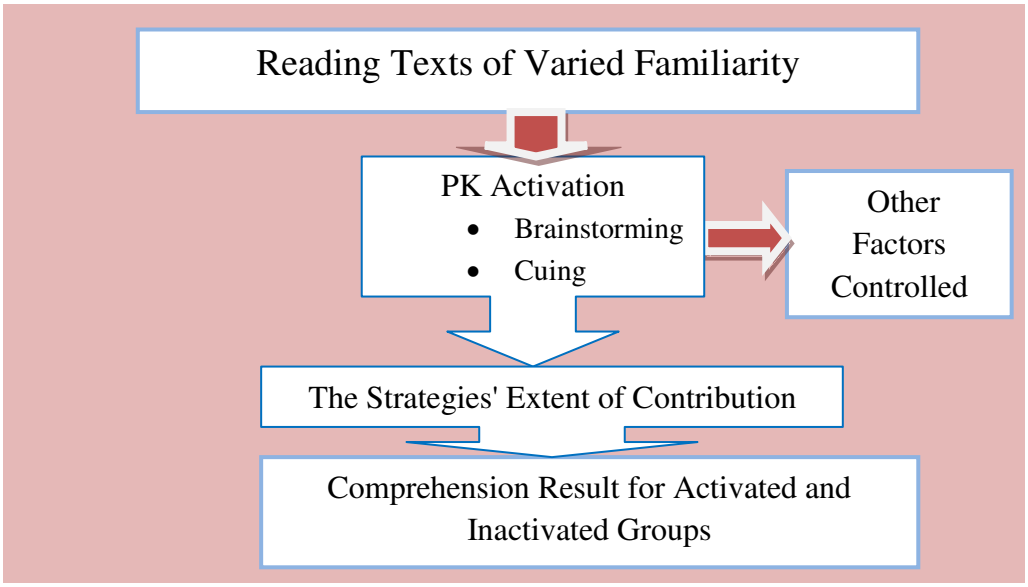

Figure 1: Conceptual Framework of the Study Depicted Based on Literature

Figure 1 envisages that the activation of students' relevant PK in line with a given text can contribute to reading comprehension. This is regardless of other factors that can be found in various aspects like pedagogical factors, reading strategies, and the use of prior knowledge (Kirmizi, 2010; Chou, 2011; Zhang, 2018). In a brief presentation, the pedagogical factors involve the choice of appropriate materials (as to students' level and familiarity with texts), the use of reading stages, and the choices of reading techniques (skimming, scanning, detailed reading) conforming to the reading purposes (for literal or inferential understanding). The reading strategies involve cognitive, meta-cognitive, and socio-affective (e.g motivation) factors (Ibid).

In the conceptual framework of the present study (Figure 1), the other factors were kept constant except PK activation strategies. Participants were screened using a proficiency test to avoid the extreme top and bottom performers. As a result, the PK activation effects and the amount of contribution of the activation strategies were concentrated.

3. Methodology

3.1. The Research Design

In the current study, a mixed-methods design with a dominant quantitative approach was applied under the pragmatic research paradigm. The quantitative part involved data obtained through post-experimental tests and questionnaires, and the qualitative part involved a follow-up interview. In the experimental method, the treatment group and comparison group were randomly assigned, and the potential threat was applied to the treatment group for causal inferences, as supported by Cresswell (2012) and Gray (2004).

3.2. The Research Site

The research site was Arjo Senior Secondary School, located south of Nekemte Town and north of the Ilu-Ababor Zone in Oromia, Ethiopia. It was purposefully chosen for the homogeneity of the school population's background, as identified ahead of time by the researcher, for the investigation of prior knowledge effects in relation to texts from various cultural contexts. In addition, following Cohen et al. (2007), the post-test samples were selected from populations of similar cultural and linguistic characteristics. The findings of such a meticulously chosen sample could be extrapolated to a similarly framed population. This is supported by Black (2002), Gray (2004), and Bethlehem (2009).

3.3. Samples and Sampling Technique

The sample size of the study was 175 students in grade 11, who were divided into four sections selected by lottery among six sections. This number of 175 was filtered out of 187 students after the outliers were trimmed using proficiency tests. The sample size was sufficient since it even exceeded 10 to 15, the number proposed by Field (2013). The samples were divided into two groups: the 88 PKA group (prior knowledge activated or treatment group) and the 87 PKIA group (prior knowledge inactivated or comparison group).

3.4 The Experimental Procedure

The experimental procedure began with training delivered to a teacher of the treatment group on an intervention manual prepared by the researcher around the objectives of the study. The researcher trained the teacher on the manual for two days in his free time. The objective of the manual was to investigate if students who were activated on how to use their prior knowledge related to a reading text outperformed those who were not activated with respect to the three differently familiar texts. The material consisted of reading lessons accompanied by texts. They were written on the target students' culture, on other neighbouring societies' cultures, and on foreign cultures. They also focused on the use of PK activation strategies, with particular attention to brainstorming and curing. The teacher taught the students using the manual for eight weeks. The intervention was followed by post-test administration, questionnaire data collection, and a group interview. Then the data were analysed and interpreted. The post-test and the questionnaires were administered to both the PKA and PKIA groups, whereas the interview was conducted with the selected participants among the PKA group.

3.5. Data Collection Instruments

The data collection instruments of the present study were post intervention test, questionnaire and group interview.

3.5.1. Post-test

The purpose of using the post-test was to examine the effect of PK activation on the target students' reading comprehension. Specifically, it was aimed to test the mean significant difference between the PK-activated (PKA) group and the PK-inactivated (PKIA) group with respect to the three differently familiar texts against brainstorming and cuing. The post-test consisted of 18 multiple-choice items for each text and 54 total questions.

The texts were "The Symbolism of Coffee" (T1), the locally unfamiliar text entitled "Marriage in Goshwuha" (T2), and the foreign unfamiliar text entitled "The Miracle on the Hann River" (T3), taken from the current English for Ethiopia, grade 11 textbook after confirming that the students had not gone through the reading texts in their textbook. The texts were all expository texts, and the two former ones were a bit modified to balance the language structure

of the three texts. Tests were administered following an eight-week intervention on PK activation lessons.

3.5.2. Questionnaire

A structured, self-completion questionnaire was developed by the researcher based on existing literature. It consisted of 13 closed-ended questions on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The rationale for using the questionnaire in the current study was that it was supposed to answer research question number 2, which could not be answered by the other instruments employed in the study. The questionnaires distributed to the PKA group students totalled 94. Out of these, 86 (91.5%) were returned. The unreturned number was only 8 (8.5%). A sufficient number was returned, and the analysis continued.

3.5.3. Group Interview

Group interview (GI) is a qualitative data collection method (Kothari, 2004; Morse, 2012; Creswell, 2012) from groups of people who have a common understanding and are qualified to contribute to a specific issue (Creswell, 2012; Denscombe, 2007; Cohen et al., 2007). Scholars suggest ten to twenty questions in an interview (Morse, 2012) and 4–9 participants (Creswell, 2012; Cohen et al., 2007; Creswell, 2002; Denscombe, 2007) in a group. They also suggest a minimum of 30 total participants on an issue.

Based on these, the present researcher framed 12 semi-structured interview questions based on the framework of the study. He considered 30 students in five groups of interviews and six English teachers to probe additional data and obtain information not accessible through the test and the questionnaire.

3.6. The Data Analysis Methods

Descriptive and inferential statistics were used to analyse the data. In descriptive statistics, Levene's test is used to check the equality of variances. Test item analysis and the KR-20 formula were employed to test the reliability of the test items. Cronbach's alpha was used to check the reliability of the questionnaires, as indicated in the main report. In addition, Kolmogorov-Smirnov, skewness, and kurtosis were used to check the normality of the data distribution as a descriptive statistic. The inferential statistics used were the t-test to check the test mean score for a significant difference between the treatment group and the comparison group, and the Wilcoxon signed test was employed to examine the significant difference between the contribution of cuing and brainstorming in PK activation of the target students' reading comprehension. Lastly, thematic analysis and interpretation of the interview data were carried out.

3.7. Validity and Reliability

For validity, the study passed through the scientific procedure in rationalizing the reasons for selecting the title, the sites, the design, and the methods. The research instruments, including the intervention manual, were tested for validity and reliability using a pilot study and the expertise of colleagues and advisors. To mention some specific validation tests, the validity and reliability of test items were checked through expertise comments and statistical tools involving the analysis of the items' difficulty index ($FV = \frac{U+L}{N}$)and discrimination index ($D = \frac{U-L}{n}$). In addition, KR-21 Formula ($r_{total\ test} = \frac{(K)(D2)-X(K-1)}{D2\ (K-1)}$, where K = number of test items, D^2 = standard deviation of the test score squared, X = mean score of the test) was used to test their internal reliability.Each test's reliability was .51 for T_1, .69 for T_2, and .83 for T_3. Similarly, the questionnaire and the group interview's validity and reliability proceeded through the expert comments of the advisors, colleagues, and timely examiners. The questionnaires'

statistically checked reliability was .88, .77, and .84 for T_1, T_2, and T_3, respectively. They were all highly reliable and were employed for data collection.

4. Results

The result section of this study reports the tests' mean scores, a significant difference between the treatment group (PKA) and the comparison group (PKIA), and the PK activation strategies and their prediction power on the students' reading comprehension. The first sub-question was a comparison of scores to examine if there was a significant difference between the mean scores of the PKA group and the PKIA group. The second sub-question was to identify the PK activation strategy that the target students used. To this end, the first sub-question was quantitatively analysed using test scores, and the second sub-question was analysed using questionnaire data. Both were supported by the responses from the group interviews.

4.1. The Comparison of Mean Scores between the PKA and the PKIA Groups (RQ1)

The purpose of this section was to see if there were any significant differences in reading comprehension mean scores between the PK-activated group and the PK-inactivated group students at the target site. To this end, the test mean scores of the three different familiar texts were compared. The comparison was in terms of the total scores of the PK aspects for each text. To this end, the assumptions of the comparison test, particularly of the normality of distribution and the homogeneity of variances of the groups' test scores were tested (see Tables 1 and 2).

Table 1: Normality of Distribution of the Three Texts' (T_1, T_2, T_3) Test Scores of PKA and PKIA Groups

Item	Group	Mean	Variance	Kolmogorov-Smirnov			Skew	Kurt
				Stat	df	Sig.		
Average Score of the Three Texts	PKA	13.00	6.05	.093	88	.057	.682	.188
	PKIA	11.25	1.29	.074	87	.200	.388	-.421

The Kolmogorov-Smirnov test of normality distribution of reading comprehension average test scores (See Table 1) for the PKA and PKIA groups indicated normal distribution because there was no statistically significant difference between the normal distribution and the distribution of actual scores. This was statistically explained as $D(88) = .093$, $p > .05$ for the PKA group, and $D(87) = .074$, $p > .05$ for the PKIA group.

Similarly, skewness and kurtosis were closer to zero (except a bit for PKA skewness), revealing that the scores were normally distributed. The skewness and kurtosis values for the PKA group were .682 and .188, respectively, and.388 and -.421 for the PKIA group. These results indicate the fairness of the distribution of the scores for both groups, which is in line with the normal distribution.

Table 2: Test of Homogeneity of Variances of PKA and PKIA Groups

Item		Levene's Statistic	df_1	df_2	Sig.
Av. Scores of T_1, T_2, T_3	Based on Mean	34.446	1	173	.000

In another assumption, Levene's test of the homogeneity of variances yielded values that revealed significant differences between the variances of the PKA and the PKIA groups' means (See Table 2). The variances (See Appendix AF) of the PKA group scores and those of the PKIA

group scores were 6.05 and 1.29, respectively. Levene's test revealed that these scores were significantly different at p<.001. The obtained value indicates that there is no homogeneity. However, the literature shows that because statistical tests of comparison are robust, the lack of homogeneity has no significant effect (Pallant, 2011). As a result, the comparison was made using the assumption "Equal Variances Not Assumed" using an independent t-test (parametric test) for the two separate groups (Table 3).

Table 3: Comparison of the Average Reading Comprehension Scores of the Three Texts for PKA and PKIA Groups

Item	Group	N	Mean	Variance	t-test comparison of Means		
					t	df	Sig (2-tailed)
Average Scores of T_1, T_2, T_3	PKA	88	13.00	Equal Variance not Assumed	6.060	173	.000
	PKIA	87	11.25				

As can be seen in Table 3, there was a significant mean difference between the PKA (prior knowledge activated) group and the PKIA (prior knowledge inactivated) group's reading comprehension result due to PK activation. This is statistically represented as t (173) = 6.06, p<.001. From this t-test value and the comparison of the raw mean data, it was possible to conclude that the PK-activated group scored a better result than the group that did not undergo PK activation.

4.2. The Comparison of the Effectiveness of the PK Activation Sub-strategies

Apart from the confirmation of the effect of PK activation on reading comprehension using the test results and questionnaire, the interview results have provided additional evidence. The students responded that what they learned from the intervention instruction helped them better understand the texts they read. In this regard, S_1 said the following: "The time taking one becomes clear if others show the way. What [the teacher] taught us as a special lesson helped me…" The respondent confirmed that he benefited from the intervention to work on the test, implying that the quantitative analysis result was true.

The other student (S_2) also mentioned, "That we learned helped us. If something is what we knew before about, it is advantageous since we gradually dig it out". He meant that the strategy he learned helped him to understand beyond the experience he had before. S_3 added that the cuing words from which she got her concept from the intervention helped her understand the reading texts. She was quoted as saying, "If we don't know (at least) the title of what we read, we should know some of the words in it. … If we don't know, yes, it has disadvantage". The other respondents, including S_4, S_5, S_6, S_7, S_8, S_{22}, and S_{27} detailed in a similar way that both PK activation strategies applied in the present study made them think, about what they read in depth. In general, the results of the interview analysis agreed with the results of the quantitative data analyses, which revealed that the PKA group had better comprehension results.

RQ2: What is the PK activation strategy that more helped the target students?

The PK activation strategies that were considered for the purpose of the present study were brainstorming and cuing. Before carrying out the analysis for the target sub-question, the normality, and homogeneity of the variances of the questionnaire data were checked (see Table 4).

Table 4: Normality Test of PK Activation Strategies' Scores (PKA Group)

Item	Group	Mean	Variance	Kolmogorov-Smirnov			Skew	rt
				Statistics	df	Sig.		
Brainstorming	PKA	2.97	.958	.122	86	.003	.101	.826
Cuing	PKA	3.16	.737	.098	86	.041	.349	.601

The test of normality in Table 4 shows a non-normal distribution with reference to both the K-S test and skewness and kurtosis. For brainstorming, the test indicates non-normality at D(86) =.122, p<.05 K-S, and -.826 kurtosis. Similarly, non-normality is true at D(86) = .098, p<.041 K-S and .601 kurtosis. Hence, the robust nonparametric test was proposed for further investigation.

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Table 5: Levene's Test of Equality of Variances for PK Activation Strategies

Group		Levene's Statistic	df1	df2	Sig.
Brainstorming	Based on Mean	1.769	1	170	.185
Cuing	Based on Mean	.167	1	170	.684

The test shown in Table 5 shows that the variances in both groups are the same at p >.05 based on mean scores. There was no significant difference between the variances, since p =.185 for PKA brainstorming and p =.684 for cuing. With regard to T_2 and T_3, the assumptions of normality and equality of variances were computed in the same way as for T_1. The normality of distribution was not achieved for both strategies in both texts, whereas there was a successful equality of variance. Hence, the Wilcoxon test of comparison was performed for the ordinal data in Table 6 as follows.

Table 6: Wilcoxon Signed Test Comparison between Brainstorming and Cuing

Item		N	Mean Rank	Z	Asymp. Sig (2-tail)
T_1 Cuing Mean–T_1brainstorming Mean	Negative Ranks	31[a]	40.73	-2.182[b]	.029
	Positive Ranks	52[b]	42.76		
	Ties	3[c]			
	Total	86			
T_2 Cuing Mean–T_2Brainstorming Mean	Negative Ranks	36[a]	39.92	-1.711[b]	.087
	Positive Ranks	49[b]	45.27		
	Ties	1[c]			
	Total	86			
T_3 Cuing Mean–T_3Brainstorming Mean	Negative Ranks	34[a]	46.72	-.876[b]	.381
	Positive Ranks	50[b]	39.63		
	Ties	2[c]			
	Total	86			

The comparison of the rating of brainstorming and cuing using the Wilcoxon test was significant for T_1 at Z(86) = -2.182, p<.05 based on a positive rank. That is, cuing was a better

strategy for understanding the familiar text, Symbolism of Coffee, with a mean rank of 42.76. However, the result showed that there was no significant difference between brainstorming and cuing for T_2 (at Z(86) = -1.711, p >.05) and T_3 (at Z(86) = -.876, p >.381). This implies that the most familiar text, T_1 (Symbolism of Coffee) consisted of more cuing expressions and context than the intermediate and unfamiliar texts, T_2 (Marriage in Goshwuha) and T_3 (The Miracle on the Hann River). The correlation and regression tests were not conducted between the total test scores and the PKA strategies. The reason was that the correlations between them were not significant in the main study.

The PK activation strategies, in the current study, comprised brainstorming and cuing with their specific units. The detailed parameters of brainstorming related ideas were thinking and remembering, thinking and listing down, reacting to questions posed by teachers, and thinking to relate what is read to previous knowledge after reading. The parameters of cuing were clues from previously known keywords, known object names and familiar words, known cultural context, customs reflected in the text, historical concepts, and material names.

The extent of the PK activation strategies used in the current study was examined through interviews and the majority of the students revealed that cuing was their better strategy for their reading comprehension. This is regardless of the fact that they did not reject the contribution of brainstorming that their teachers sometimes used to activate their PK. Explicitly, S_3 pointed out that there should be something known prior in a reading text to understand its message though knowing everything may not be mandatory. She mentioned, "It is must for us to know one thing about what we read to know". In addition, S_4 explained his thought on the benefit of cuing as a PK activation strategy saying that even a foreign context can be familiarised by using an analogy that employs comparative expressions from the readers' local context. This implies that the familiar expressions they get in the text can be used as cuing strategy to activate their PK to understand the foreign concept analogically.

Another respondent, S5 explained the better contribution of cuing as follows. She said, "When the teacher says to us 'Try this thing,' [brainstorming] if we know a word [cuing] among what we try, we can remember many things. For example, for a reading text titled 'Gada System', if we know the system, it reminds us even many things about the past. What we independently find is better than what the teacher tells us, to remind us another". The respondent was to mean that he could remember a lot of related things if they knew a word from what the teacher told them to try out. For instance, concerning a reading text titled SirnaGadaa (The Gada System), what they knew was better to remember other related things when they knew about the Gada System. Hence, brainstorming itself is effective whenever the students come across cuing matters in relation to a given reading text.

Similarly, S_6, S_7, and S_8 described both strategies as important with the particular effect of cuing. They showed that brainstorming pushed them towards the reading texts whereas cuing or what they knew before from the texts helped them to get motivation for understanding. Among these respondents, S_6 was quoted as "… Though thinking starting from what we know more supported us, what the teacher asks us based on his analysis makes us to broadly think". He recognized that though thinking on the basis of cuing (what they knew from the text) was more helpful, what the teacher asks them based on his own analysis made them think broadly. Further, S_{21}, S_{22}, and S_{23} had similar responses to those explained herein. Therefore, the students confirmed that cuing was the strategy the students benefitted from in their reading comprehension.

5. Discussion of the Findings of PK Activation on the Students' Reading Comprehension

The researcher examined and found grade 11 students' PK activation effect on their reading comprehension in relation to the given reading texts at Arjo Senior Secondary School. With regard to the first research question, the results of the t-test analysis and the interview

results showed significant differences between the scores of the PKA and PKIA groups. This implied that the PK-activated group outperformed the group that did not undergo PK activation. In relation to the finding, previous works witnessed the contribution of PK activation strategies to which Zhang (2018) study result in Singapore was the one to which the issue is attributed. The activation strategies initiated by the teacher (brainstorming) and by the text (context and word cues) made the PKA group score better result than the PKIA group with a significant difference which aligns the finding with that of Alhaisoni (2017) and McNemara (2007) that recognized the contribution of PK activation.

Regarding the second research question, cuing was the PK activation strategy used more effectively than brainstorming by the students. This implied that cuing is the better strategy that the student readers use to comprehend texts independent of external aid while brainstorming is dependent on an external initiator. The finding also implies that reading texts need to be adjusted in such a way that they can cue the target reader by involving elements they know in the text for better comprehension of a new concept. This finding went in line with Cason's (2011) that confirmed the contribution of PK activation strategies with particular attention to cues. In addition, it is a finding similar to Costley& West's (2012) previous finding that confirmed text-based PK activation through the investigation of PK and inter-text integration.

6. Conclusions

With respect to the effect of PK activation on Arjo SSS students' reading comprehension, there were significant differences between the mean scores of the treatment (PKA) and comparison (PKIA) groups with the better result of the treatment group. This was confirmed by the integrated outcomes of both the quantitative and the qualitative analysis results. This finding led to the conclusion that the target students' PK activation contributed to their reading comprehension.

As PK activation strategies were used by the students, the study pointed out that cuing was a more effective strategy than brainstorming. The reason is that cuing is the strategy that exists in reading texts independent of external aid in contrast to brainstorming which depends on an external initiator. The study showed that teachers used brainstorming though they understood that cuing was used more by the students from the texts.

Recommendations

Based on the findings, the following solutions have been recommended to the concerned bodies. Accordingly, the MoE ought to recognize the effects of PK activation on the learners' reading comprehension. It needs to establish platforms to raise the awareness of the curriculum designers. The curriculum designers are expected to locate rooms in curricula for PK activation strategies, particularly cuing strategy, even in unfamiliar texts. This can give freedom for material preparers and teachers to include the appropriate reading texts with their PK activation strategies and urge students to exploit the strategies in their reading comprehension.

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