

The Effect of Active Learning Spaces on Students' Writing Proficiency [†]

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Abstract: Although traditional classrooms are still the norm in academia, the number of Active Learning Spaces (ALS) in universities is increasing. The conflicting results in the literature behoove educators to continue researching the effects of ALS on student learning in various disciplines. The following study attempts to explore whether ALS classrooms have a significant effect on freshmen students' writing proficiency. The results and the implications of the findings of which will be discussed.

Keywords: active learning classrooms; proficiency; complexity; accuracy

1. Introduction

Although traditional classrooms are still the norm in academia, the number of Active Learning Spaces (ALS) in universities is increasing. ALS rooms are equipped with mobile changing stations, glass whiteboards, portable whiteboards, LCD screens, and rolling node chairs and rolling tables to increase comfort (Benoit 2017) [1]. Once ALS classrooms began to appear, the research started to show that traditional classrooms can negatively impact the entire learning experience from comprehending material to teacher evaluations (Lei 2010) [2]. In Hyun et al. (2017) it is noted that the majority of early studies in ALS research, mostly in the field of engineering, have shown positive effects in student comprehension and equally important student perceptions (Prince 2004) [3,4]. However, a study by Albaaly and Higgins (2011) showed that there was no improvement in the learning of medical students [5]. To measure the effects of the actual ALS, higher educational institutions are focusing their investigations on the direct impact ALS has on student learning. Some of the conclusions show that both the pedagogy and the perceptions of both teachers and students were improved. Even though more recent studies argue that students learn more in ALS spaces than they do in traditional classrooms (Chiu 2016), there were inconclusive studies in courses on biology (Andrews 2011; Stoltzfus 2016) [6]. Byers et al. (2018) argue that the space alone in secondary education is not directly impacting learning [6]. The ALS classroom breaks down social barriers and allows for greater and easier access to technology, but as Byers et al. data reveals, the space itself neither interfered nor promoted student use of technology (p. 158). As research in this urgent field progresses, studies have been leaning toward the idea that the space itself may or may not have a significant impact on student learning. Vercellotti (2017) compares learning spaces to traditional classrooms and reports the sobering results that “context did not result in differences,” but concedes that ALS increases the effectiveness and efficiency of the lessons [7]. One of the ways ALS may promote more effectiveness is that it allows students greater access to collaborate and form alliances (Baeppler and Walker 2014) or encourages team teaching so students have more input from teachers

(Metzger 2015) [8,9]. ALS research needs both depth and breadth. In line with the conclusions of the majority of researchers on the issue of ALS and its impact on students, we believe that sharper and more research is greatly needed in this field. In particular, research needs to know exactly what element of learning is improving, a feature of writing, comprehension of medical terms, or skill with a scalpel?

2. Materials and Methods

In light of the existing gaps in the literature regarding ALS, in addition to the lack of empirical evidence of the effects of ALS on the proficiency of students' academic writing, the focus of the proposed study is to examine the effects of ALS on the proficiency (measured as accuracy and complexity) of students' academic writing. The study attempted to answer the following research questions:

RQ1. Do active learning spaces (ALS) have an effect on students' writing accuracy?

RQ2. Do active learning spaces (ALS) have an effect on students' writing complexity?

The study was conducted at a co-educational university in the United Arab Emirates where sixty English academic writing students participated voluntarily in the study. The data was collected from four intact groups of academic writing classes. Thirty students were taught in the ALS classroom and the other thirty were taught in a regular classroom. The teacher was the same in each group. The students in the treatment group were then taught in an ALS classroom throughout the 15 week term and were taught using activities and teaching methodologies concurrent with ALS classroom pedagogy. The students in the control group were taught in a regular classroom using traditional teaching techniques. Their first essay submission during week 1 of the term and final essay of the term during week 15 were collected and analyzed for writing proficiency measures: accuracy measured as error free t-units per t-unit following (Wolfe-Quintero et al., 1998) and overall syntactic complexity measured as mean length of t-units [10].

3. Results

In order to find out if the students in the four groups began the study with similar writing proficiency, a one-way ANOVA was performed. The results showed that the two groups were similar with no significant results. Hence, we can assume that any differences in error counts found later on in the study, are not related to initial differences between treatment groups.

Research question 1 asked: Do ALS classrooms lead to an increase in the accuracy of students' academic writing compared to a traditional classroom?

In order to answer the research question, a one way repeated measures ANOVA was conducted to compare the effect of the ALS classroom on students writing accuracy. The results show there was no significant main effect of time comparing pre and post-test scores for accuracy, ($F(1,58) = 0.433, p = 0.069$), there was also no significant main effect for group ($F(1,58) = 1.493, p = 0.783$, and there was no interaction between time and group ($F(1,58) = 1.484, p = 0.228$).

Research question 2 asked: Do active learning spaces (ALS) have an effect on students' writing complexity?

In order to answer this research question, a one way repeated measures ANOVA was conducted to compare the effect of the ALS classroom on students writing complexity. The results show there was no significant main effect of time comparing pre and post-test scores for complexity, ($F(1,58) = 1.580, p = 0.214$.) There was also no significant main effect for group ($F(1,58) = 1.572, p = 0.215$), and there was no interaction between time and group ($F(1,58) = 1.475, p = 0.229$).

4. Discussion and Conclusions

The classroom context, did not have any significant impact of the writing proficiency measured as accuracy and complexity of the students. The means were similar at the post-test, which matches previous findings (Ford et al., 2012; Morris and Chikwa 2014; Vercellotti 2017) [7, 11,12]. It is possible that there were no gains in the ALS classroom due to the instructor not maximizing the possibilities

the ALS offers, or that due to the study only being conducted over 15 weeks, the gains in writing proficiency did not materialize over a short study design. Or it could be that the ALS classroom achieve the same teaching goals in different ways and offers no significant benefit over a traditional classroom. More research and long term studies are needed spanning a few years to determine if learning gains are greater using ALS classrooms before large scale investment in them is made.

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