OPTIMAL CONTEXTS AND PERFORMANCE AT ART CLASSROOMS: MINDSET THEORY HAS A LOT TO TELL US

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Summery

This study is based on Dweck's mindset theory in Iranian educational context. The current study aimed to determine how mindset intervention effect on students' performance in calligraphy classes. For this, an experimental design was chosen. Subjects included 45 students. Subjects were randomly assigned to two experimental equal sized groups and one control group. Group 1 got a set of instructions about growth mindset, and group 2 set of instructions about fixed mindset. In the first step, all subjects got three easy homework assignments. In the second step, subjects were given ten difficult homework assignments. The subjects were asked to do as many asassignments as they liked during two weeks or to skip them. ANOVA of the resulting data showed the growth mindset group (group 1) exhibited the higher performance. The fixed mindset group (group 2) demonstrated the least performance. The findings highlight that growth mindset can improve students' performance. So, at calligraphy classes where students' performance is very important for achievement, teachers must try to encourage growth mindset in the classes to improve students' performance in the face of difficult tasks.

Keywords: Growth Mindset; Fixed Mindset; Performance; Art

1. Introduction

Persian calligraphy is one of the most famous and beautiful arts that is taught in Iran. In the traditional classes for calligraphy teaching, learners learn how to use ink and specific calligraphy pen on paper. Teacher give them the sample that called "Mashq". Learners practice Mashq several times. Teachers evaluate Learners' Mashqs, one by one but not in private way, carefully and give them feedbacks. In calligraphy classes like other educational settings, learners' performance is very important to achieve academic goals [1]. Research have shown students mindset or self-theories about ability has influence on their performance in academic settings [2] and physical education classrooms [1; 3]. Dweck [4] proposed that "Mindset" is students' personal theory of the nature of his/her ability. Some of students hold a "fixed" theory of ability. They attribute ability to fixed traits (fixed mindset). Some of students attribute ability to effort, learning strategies, training methods, and practice (growth mindset).

As students who hold *fixed* mindset don't agree academic achievement is related to their effort, so they are not using the feedback to learn. They like only feedback on their good performance in tasks as much as it serves to evaluate their underlying ability. Rather, fixed mindset students believe that the level of innate ability determines their success in activities. Therefore, they are terrified of failure and don't like to face challenging tasks and take risks because it says you have weaknesses and some limits that you can't do anything to overcome [5]. For *growth* mindset students, on the other hand, success depends on effort. So, they don't dread failure, because it only signals the need to modify learning strategies, pay more attention, try more effort, and take the new learning opportunity. They believe that effort will help them to learn, and then improve their ability and performance [6]. These students say welcome to making mistake, because they believe in learning from mistakes and grow ability up. Hence, during learning process, growth mindset students are flexible and self-regulated in face of obstacles, challenges and failures [7].

Messages that teachers send to students can influence their mindset taking. When teachers attribute success to inborn abilities, students will come to take a fixed mindset ("Ali successes the

calligraphy exam because he is high on hand-writing ability"). When teacher attributes the success to the student's inborn ability or aptitude, it can be particularly likely to encourage a fixed mindset in students. However, if teachers attribute success to effort and practice, students will be more likely to developed a growth mindset ("Sara successes the calligraphy exam because she puts in the time and practices"). Praising students' efforts, or attributing success to students' prior practice, help them to develop a growth mindset [8].

Dweck [9] suggests that mindset is an important part of student's motivational systems. Mindset could influence the students' goals at school and class, the paths they choose to take, their resistance and effort that they show as well as predict failure. Research has shown that students with fixed mindset (vs growth mindset) when evaluating their past and future performance, set performance goals (vs learning goals) [10], use helpless-oriented strategies (vs mastery oriented) in the face of obstacles [1].

Nevertheless, many researchers have tried to modify mindset both in laboratory [11] and in real life [1; 12]. A huge amount of research has shown students' mindset could be flexible and we probably can change mindset via interventions that give students information on the brain's malleability and teach them about mindsets [13; 14; 15; 16]. Mega, Ronconi, & De Beni [17] write that students with growth mindset may increase their level of strategy use to regulate their learning. However, students who believe in fixed mindset may give up the task. Mindset may undermine/help student's short and long term academic achievement by fostering avoidance/applicant of obstacles in face of difficult tasks.

The current study tested the impact of mindset (fixed vs growth) on students' performance at Persian calligraphy classes. Calligraphy is one of the oldest and most important of Iranian arts. A lot of students from all ages, enrol in calligraphy in cities and towns in Iran. They are students who choose to take this course. Three times every year, the Iranian Calligraphy Association holds calligraphy exams (January, April, and August) for students all over Iran. Learning calligraphy is a very slow process and entails practising a great many details. Students must pass nine levels to graduate from the Iranian Calligraphy Association. It takes at least two years. The levels get progressively harder and more difficult. For example, the eighth and ninth levels take at least one-two years to pass. Therefore, student persistence and performance is a very important factor for success in calligraphy classes. From theoretical and experimental bases, we hypothesized that: the growth mindset would increase students' performance at calligraphy classrooms, and fixed mindset would decrease it.

2. Method
2.1. Participants

A field empirical method with a post-test with control group design was conducted in this study. 45 Iranian calligraphy students (age mean = 13.4 y/o) randomized into three same saized groups (n=15) (two experimental groups and one control group), (see the table 1). We asked and got subjects' parents´ consent, and they were informed about experiment's conditions. All subjects had passed calligraphy exam of third period and were going to get ready for fourth period. As, in Iran, schools and classes are separated for males and females, we only conducted study on the male students. All subjects came from Qazvin city that is known as calligraphy capital of Iran, where students' handwriting is so important for education organization and schools.

Table 1: A post-test with control group design

Group	Independent Variable	Post-test
Growth Mindset	X_1	T
Mastery Mindset	X_2	T
Control	-	T

2.2. Measures

Mindset. The 'Mindset Questionnaire, Version Two' [11] was employed to examine growth and fixed mindset through 8 items that employ 6-point scales (1 = Disagree A Lot to 5 = Agree A Lot). Wang and Koh [18] report its internal consistency were by.78 cronbach's alpha coefficient.

Performance. Number of home works that students had done in third step was used to measure students' performance. These homework assignments had been chosen from the Iranian Calligraphy Association's previous calligraphy exams for the fifth level that were too difficult for subjects.

2.3. Procedure

The study was conducted in spring (March). To increase the ecological validity of the study, it took place during the students' regular classes. The subjects were randomly assigned to three groups, include control group and two experimental groups (growth vs fixed). Experimental groups received two same-length sets of written biography about a great Iranian calligrapher, "Miremad". The text sets were about two pages, so no one looking at then would suspect there were differences among the texts. The participants read their assigned set of texts. Mindsets were manipulated in the biography texts. The fixed mindset was operationalized by using explicitly fixed language such as: ''Miremad knew that innate talent is the most important factor'', ''he had inborn brilliance'', ''nobody ever could be the same as him and he will stay the best calligrapher for all time''. In the growth mindset condition, wording such as ''Miremad knew that effort is the most important factor'', ''he was brilliant because of his endeavor'' and ''anybody could be the same as him; it just needs effort'' were used instead. Then, the mindset scale was employed to examine whether the mindset manipulations produced the intended effect. Control group didn't get any biography and didn't complete mindset scale.

In the second step, all subjects were asked to do three easy calligraphy homework assignments in three days (one assignment per day). Each of the three assignments had been chosen from the Iranian Calligraphy Association's previous calligraphy exams for the second level. All subjects did their homework well.

In the third and final step, all subjects were provided with ten homework assignments, each more difficult than the one before. All ten assignments had been chosen from the Iranian Calligraphy Association's previous calligraphy exams for the fifth level. The subjects were asked to do as many assignments as they liked over two weeks or to skip them. After the experiment, participants got information about the purpose of the research and were thanked.

3. Research findings

For analysing the collected data, we employed ANOVA method. You can see the descriptive indexes (mean and standard deviation) of measured variable in the table 2.

**Table 2: The performance means
and standard deviations of the three groups**

Growth Mindset	Fixed Mindset	Control
M = 8.85	M = 4.12	M = 6.08
SD = 1.13	SD = 1.93	SD = 1.01

As table 2 shows the least performance was seen in students of fixed-mindset group, and the most performance was shown in subjects of growth-mindset group. one-way analyses of variance demonstrates a significant differences among dependent measures (see table 3).

As shown in table 3 the F values were statistically significant (F=47.9) > F (1, 42) = 7.07, p < .01. Subsequently. In table 4 you can see the results of follow-up Tukey (HSD) test for independent variables.

Table 3: one-way Analysis of Variance

	SS	df	MS^2	F	P
SS$_B$	46.47	1	46.47		
SS$_W$	40.81	42	.97	47.9	.01
SS$_T$	87.28	43			

$$HSD = 3.6\sqrt{0.97/15} = 0.91$$

Table 4: Follow up contrast analysis with Tukey test

	Group 1: $\overline{X}$ = 8.85	Group 2: $\overline{X}$ =4.12	Group 3: $\overline{X}$ = 6.08
Group 1: $\overline{X}$ = 8.85 Growth mindset	-	4.73*	2.77*
Group 2: $\overline{X}$ = 4.12 Fixed mindset		-	1.94*
Group 3: $\overline{X}$ = 6.08 Control Group			-

Results of Table 4 shows subjects in groups 1 (Growth-Mindset group) and 2 (Fixed-Mindset group) orderly shown significantly most and least performance. Participants in control groups shown significantly more performance compared with group 2 and leas performance compared with group 1.

4. Conclusion

Students' mindset about their ability and qualities has important implicit for motivation and behaviour [19]. The teachers can influence students' performance in amazing ways. In this study we were interested in exam if mindset manipulating (fixed vs growth) influence on students' performance at calligraphy classes.

In this study, we divided the calligraphy students into three groups and asked them to work on calligraphy tasks. At first set of home works, groups 1 (growth mindset group) and 2 (fixed mindset group) and control group could write them totally. When the first easy task became harder, the groups' reactions were very different.

Fixed-mindset subjects gave up the harder tasks, while growth-mindset students preferred to do harder tasks. Subjects in growth-mindset group shown most performance and challenge-seeking behaviour. The lowest performance was observed in fixed-mindset group. This subjects avoided challenge in favour of ensured success. The results supported the hypotheses and demonstrated fixed-mindset reduces performance in calligraphy classes, in contrast to growth-mindset. This finding is important for teachers who are concerned with students' performance at art classes where tasks and home works increasingly get harder. These findings are consistent with Yeager et al., [14], Yeager et al., [13], Khalkhali, Zolqadr, & Khalili [2], Khalkhali [1], Chao, et al, [16] and Rattan, et al, [15]. Khalkhali, Zolqadr, & Khalili [2] have shown that growth mindset intervention could increase students' performance when there were faced with difficult home works.

In the current study, doing the 10 difficult calligraphy tasks in two weeks was a very difficult task and could trigger mindset to show its role. For fixed-mindset students facing of difficult task is a sign of low ability: we must not be so clever. This students despite their poor grades and academic performance, are trying to find a way to save their perceived competence and mostly, avoidance (low performance) is first option. As was observed in this study, fixed-mindset students (group 2) showed the least performance in comparison with other groups. Group 1 (growth-mindset) showed the most performance. Control group's performance significaly was more than fixed-mindset group. This is interesting finding, that showes if teachers never encourage fixed mindset could more

help students and improve their performance in compare when they talk about students inborn and native abilities and apptitudes.

5. Conclusion

The findings, despite the some limitations, have important implications. They recommend that the type of mindset (fixed vs growth) that teacher encourages at classroom could affects the students' performance in high difficult achievement situation. Students with fixed mindset look for performance goals (for example, to finish the calligraphy task faster than others) but students with growth mindset seek out mastery goals and challenges. We expected these different mindsets lead to different reactions to failure and difficult tasks. For example, Dweck [4] says that fixed mindset students tend to attribute failure to low ability or to external factors that are outside of their control. So, they are more likely to show a "helpless orientated" response to failure. Students with a growth mindset, on the other hand, tend to attribute failure to lack of effort. So, they are more likely to show a "mastery orientated" reaction to failure, and say welcome to challenge, and view it as opportunities for learning.

6. Recommendations

Orosz, Péter-Szarka, Bőthe, Tóth-Király, and Berger [20] found that subjects' mindsets are flexible and may change back to pre-intervention state of beliefs. So, teachers need to be careful about mindset that they are encouraging in the classes, all the time. Growth mindset could be developed by: providing increased opportunities for student cooperation in classroom learning, making clear expectations and using specific mastery feedback; helping students to use their full potential and show their competence; show a link between their effort and outcomes; emphasizing and acknowledging the students' concerns about failure and about close and challenging competitions so that the students feel understood and accepted. Not providing public normative information, not attributing students' success to innate ability and talent, and not rewarding them for succeeding in easy tasks.

7. Research limitation and future direction

There is few limitations in this study. First, Chao, et al, [16] found that students' sense of autonomy and prior achievement moderate the facilitating effect of mindset intervention, we didn't include them in current study.Secound, just a one kind of measure of performance (behavioral observations) was used, it seems interview and questionnaires could more information. Hence, future research might examine whether the students' sense of autonomy and prior achievement moderate mindset intervention interaction effects with praise. Future studies can use self-report scales and interview to measure performance.

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