AC 2012-4791: THE IMPACT OF A PROTOTYPE EXEMPLAR ON DESIGN CREATIVITY: A CASE STUDY IN NOVICE DESIGNERS

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The Impact of a Prototype Exemplar on Design Creativity: A Case Study in Novice Designers

Abstract

An investigation into the impact of the presence of a prototype exemplar in an introductory design experience is described. The design experience occurred early in an Introduction to Engineering course following a single lecture on the engineering design process. The design activity, necessarily simple at this stage, consisted of designing, building, and testing a drag racer, constructed from LEGO® MINDSTORMS® NXT parts and powered by a single rubber band. Students participating in the design experience were divided into two functional groups: laboratory sections where a prototype exemplar was present and laboratory sections were no example was provided. Assessment of the prototype exemplar impact was accomplished through a two-pronged approach. First, photographs of each racer were taken at multiple stages in the design experience and analyzed by the faculty, and second, a twelve-statement survey was given to all students. In addition to assigning numerical values (on a scale from 1 to 6) for their responses to the survey statements, students were asked to respond with short, written statements.

A similar rating of survey statements such as: "I am familiar with the engineering design process" (average values of 3.67 and 3.89) and "My partner came up with many ideas on how to build the racer" (average values of 4.78 and 4.60) suggests that the two groups had similar backgrounds about the engineering design process and that internal group interaction were similar, respectively.

Stronger agreement was found in the control group for the statements: "Looking at the other teams' racers improved our design" (average values of 3.86 and 3.07) and "Looking at other teams' racers decreased the need for original ideas" (average values of 3.71 and 2.33). It appears that in the control group - without an example, the prospect of an example had greater value than the exemplar group valued the actual example.

I. Introduction

A study has been conducted to assess the effects of exemplar presentation to students prior to asking those students to engage in an engineering design exercise. Five sections of an Introduction to Engineering class were assigned the same laboratory design problem. In three of those sections, the students were presented with an exemplar solution at the beginning of the design process. In the other two sections (the control group), no exemplar was presented. In the sections with no exemplar, students were given no creative guidance and were simply presented with the design problem that they needed to solve. Students were told to apply the engineering design process and then left to their own creative efforts. In the exemplar sections, the students were allowed to see a common solution before being left to their own creative efforts. Student work was then assessed through measurement (by time trial) of each iterative step forward in the design process. At each time trial, each team's solution was photographed. At the conclusion of the laboratory period, students completed a survey instrument to provide feedback about their sources of intellectual contributions to their design.

It was theorized by the authors that presenting an exemplar prior to setting the students onto a design project could alter, if not hinder, the number and type of creative solutions generated by the students. Of particular interest is whether the presence of a prototype exemplar contaminates the design process for novice designers. That is, does the prototype exemplar cause novice designers to fixate on particular design features thereby limiting creativity or does it help them to explore a greater variety of design possibilities?

The concept of designers fixating on particular design features is not new to the study of engineering design. Jansson and Smith[1] were among the first who "clearly and repeatedly demonstrated the existence of design fixation" through a series of experiments using senior-level mechanical engineering students. Linsey, et.al.[2], demonstrated that fixation on design features extends to design professionals, even those (in particular, engineering design faculty) who are trained in and study engineering design. Chrysikou and Weisberg[3] conclude that fixation due to pictorial examples "is a general phenomenon that affects individuals irrespective of expertise." On the other hand, Purcell and Gero[4] contend the pictorial information has no effect if the instance was unfamiliar, but if familiar, pictures were found to produce both design fixation and increased variety in design. Perttula and Sipilä[5] have found a high correlation between positive design outcome and the commonality of examples presented when limiting the design experience to design idea generation.

This study varies from much of what is found in the literature in two basic areas: 1) the form of the example, and 2) the duration of the task. The example presented for inspection was a prototype exemplar: a fully functional physical item that was a solution to the design exercise, able to perform the design problem task. Further, the task extended through three full cycles of iterative design improvement and the extent of exemplar contamination of the resultant design was explored at each cycle.

II. Description of the Course and Laboratory Challenge

The University of San Diego (USD) is a Catholic, liberal arts institution of higher education located in Southern California. The university offers three engineering majors: electrical engineering, industrial and systems engineering, as well as mechanical engineering. The three majors share a common curriculum in the freshman and sophomore years. Students receive a dual BS/BA degree in unique 4.5 year programs.

Engineering design is incorporated into the curriculum of the three programs at all levels. Students are first exposed to engineering design in the freshman year through two courses: ENGR 101 (Introduction to Engineering) and ENGR 102 (Engineering Design Practice). The design experience is integrated into many sophomore, junior, and senior engineering science classes. Engineering design is also an essential component in the senior capstone courses.

The Introduction to Engineering (ENGR 101) course consists of two hours of lecture and two hours of laboratory meetings per week. The course is part of USD's Preceptorial Program and it combines a regular course with topics intended to ease the students' transition into the college environment. Preceptorial courses are taught by experienced, full-time, tenure-track faculty and student enrollment is typically limited to about twenty students per class. The course instructor is also the initial academic advisor for the students. The goals of the Preceptorial Program are[6]:

1. *To fulfill a general education requirement by instruction in an essential academic discipline [this is typically for students who do not know what area they want to major in] or to prepare the student for a future major or minor [for those who do have a proposed major];*
2. *To provide early and continuing communication between the student and the advisor;*
3. *To assist the student in planning a cohesive and productive educational program;*
4. *To introduce the student to the intellectual resources of the University; and*
5. *To help the student develop the inquiring habit of mind that is fundamental to higher education.*

The laboratory component of the course is based on the LEGO® MINDSTORMS® NXT system. Students work on a variety of design challenges, including a rubber band powered racer, a shuttle race, a relay race, and a line follower. The duration of an individual challenge varies from a single week to four weeks. The challenges stress the use of the engineering design process and often include iterative improvement of an initial design.

The lecture component of the class at first complements the laboratory challenges. The course starts with an introduction to the engineering design process and programming basics of the LEGO® MINDSTORMS® NXT system. The remainder of the semester covers engineering skills and Preceptorial topics. Engineering skills covered include data analysis and graphing with Excel as well as drawing skills (isometric drawings and projections created by hand and using ProgeCAD software). Preceptorial topics include student advising, time management, exam preparation, as well as oral and written communication skills. The honors section of the class has an additional class meeting each week and covers additional topics, including library research, engineering ethics, and global perspectives of the engineering profession.

This study of design contamination was performed as a part of the first laboratory challenge. This early placement was chosen because the engineering design process is covered in a lecture in the week preceding that challenge. This lecture and laboratory combination has previously been used to study the application of the engineering design process by novice designers (Schubert, Jacobitz, and Kim[7]). All five sections of the Introduction to Engineering course taught in the fall 2011 semester participated in this study.

The first laboratory challenge is the design and construction of a rubber band powered racer by teams of two students. The racer is constructed solely from LEGO® MINDSTORMS® NXT parts and students have a chance to become familiar with the NXT parts, including structural elements, connectors, axles, gears, and tires. The programming interface, controller, sensors, and motors are not introduced until the lectures and laboratories that follow. The only energy source available to power the racer is a single rubber band. This challenge is structured to allow students to apply the engineering design process that had just been covered in the lecture component of the class.

The racer design challenge consists of three phases. In the first phase, student teams build an initial version of the racer and a competition is held. Teams compete with the measure of success being the distance covered by the racers (30% of the grade). In the second phase, students redesign and improve their racers. Again, a competition is performed, but it is not part of the grade. In the final phase, students again redesign and improve their vehicle. The final racers are evaluated for design features and aesthetics (30% of the grade) as well as distance covered in a final competition (40% of the grade).

Students in three of the five sections of the course, called exemplar sections, are shown an example of a successful racer built by students in the previous year (Figure 1). The remaining two sections act as control group sections and the students are not provided with an example. The racers designed and built by student teams are then studied for design contamination using a variety of tools: First, pictures are taken of the designs to evaluate commonalities with the example provided by the instructor or other racers designed by students in the class. Second, the students are asked to complete a survey instrument to learn about their use of the engineering design process and their observations of racer features from the exemplar provided or racers built by other groups in the class. Finally, students are encouraged to provide additional comments on the design challenge.

Figure 1. The prototype exemplar racer

The five sections of the course were split among the four investigating authors with three having a single section each and one with two sections. In order to reduce the impact on this study of different instructors, the two sections having a single instructor were assigned one to the exemplar group and one to the control group.

II. Assessment of Student Learning

In order to assess the impact of a prototype exemplar on design creativity, a two-pronged approach was used:

A. A survey, focusing on the design process, work distribution within a team, and student perceptions concerning the influence of the prototype exemplar (if applicable) and/or the influence of other student designs on a team's final design.
B. Photographs of the student racers were taken at the end of each of the three design phases and an analysis of the design progression through those photographs was performed by the investigators.

A. Survey data

At the end of the laboratory meeting, students were asked to complete a short survey. Two different survey instruments were developed for the exemplar and control sections of the class. Survey statements related to the engineering design process, work distribution within a team of students, and the use of other teams' solutions are identical. Survey statements about an instructor-provided example racer, however, are different and aim to assess the actual usefulness of the example racer (exemplar group) or the potential usefulness of an example racer (control group).

Students in each section of the class were asked to score their agreement or disagreement with the twelve statements itemized in Table 1. In addition, they were asked to provide short answers to the questions included among some of the statements. Notice that eight of the twelve questions are identical for the exemplar and control sections. Questions concerning the presence of an example (questions 6, 8, 9, and 11) are slightly reworded to reflect the difference between exemplar and control sections.

A Likert scale with an even number of levels was chosen to avoid a neutral rating and students had to either indicate agreement or disagreement with the statements. Students used the following scale to score their agreement or disagreement with the statements:

1. Strongly Disagree
2. Disagree
3. Somewhat Disagree
4. Somewhat Agree
5. Agree
6. Strongly Agree

Student comments regarding each statement provided insight into how students from each group (control and exemplar) viewed the opportunity to have an exemplar in the context of their own creative effort. Students often delineated between an exemplar provided for them and the opportunity to view the work of their peers as pseudo-exemplars.

A total of 67 students completed the surveys. Of these 32 students (47.8%) were in the exemplar (E) sections and 35 students (52.2%) were in the control (C) sections. The distribution of responses to the survey questions is shown in Table 2. An analysis of the Likert responses follows along with selected student comments. A more complete collection of the student comments can be found in Appendix A.

Table 1. Survey questions

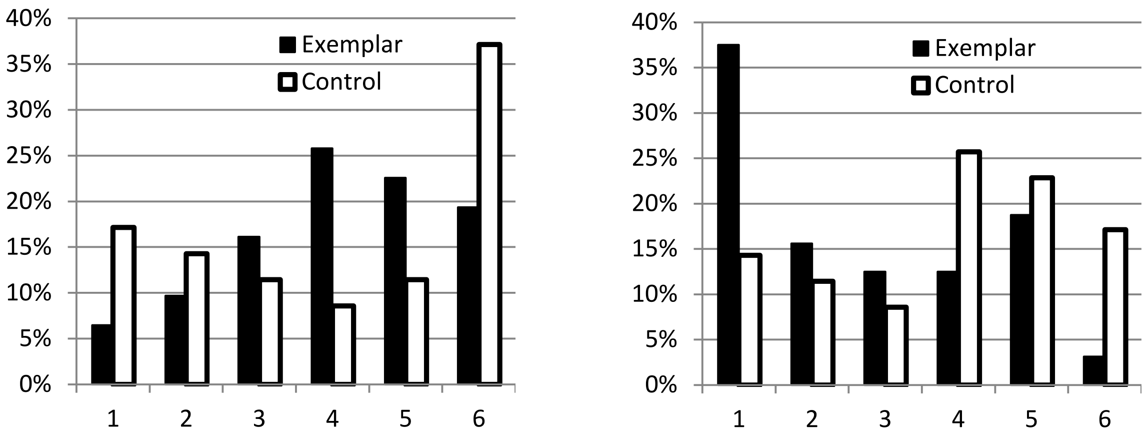
Exemplar Group Questions	Control Group Questions
1. I am familiar with the engineering design process. What are the main steps of the engineering design process?	1. I am familiar with the engineering design process. What are the main steps of the engineering design process?
2. I felt confident in applying the engineering design process during this exercise. Which steps did you feel most/least confident about?	2. I felt confident in applying the engineering design process during this exercise. Which steps did you feel most/least confident about?
3. I came up with many ideas on how to build the racer. What did you contribute to the design of your racer?	3. I came up with many ideas on how to build the racer. What did you contribute to the design of your racer?
4. My partner came up with many ideas on how to build the racer. What did you partner contribute?	4. My partner came up with many ideas on how to build the racer. What did you partner contribute?
5. We looked at other teams' racers for help. What ideas did you take from another team?	5. We looked at other teams' racers for help. What ideas did you take from another team?
6. We looked at the example racer for help.	6. I would have liked to have an example racer for help.
7. I prefer to come up with my own ideas for the design of the drag racer.	7. I prefer to come up with my own ideas for the design of the drag racer.
8. It is helpful to look at an example or prototype.	8. An example or prototype to look at would have been helpful.
9. Looking at an example racer improved our design.	9. Having an example to look at would have improved our design
10. Looking at the other teams' racers improved our design.	10. Looking at the other teams' racers improved our design.
11. Looking at an example racer decreased the need for original ideas.	11. Having an example to look at would have decreased the need for original ideas.
12. Looking at other teams' racers decreased the need for original ideas.	12. Looking at other teams' racers decreased the need for original ideas.

Table 2. Survey Response Distribution

Response Distribution in %	Group	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree	Mean	Standard Deviation
1. I am familiar with the engineering design process.	E	10	7	20	37	23	3	3.67	1.30
	C	3	9	17	43	26	3	3.69	1.14
2. I felt confident in applying the engineering design process during this exercise.	E		16	19	19	42	3	3.97	1.20
	C	3	11	17	40	20	9	3.63	1.31
3. I came up with many ideas on how to build the racer.	E		6	9	28	31	25	4.59	1.16
	C	3	3	20	31	34	9	3.88	1.20
4. My partner came up with many ideas on how to build the racer.	E			9	22	50	19	4.78	0.87
	C		6	9	20	51	14	4.50	1.21
5. We looked at other teams' racers for help.	E	38	16	13	13	19	3	2.69	1.67
	C	14	11	9	26	23	17	3.44	1.59
6. We looked (would have liked to look) at the example racer for help.	E	6	10	16	26	23	19	3.94	1.63
	C	17	14	11	9	11	37	4.94	1.61
7. I prefer to come up with my own ideas for the design of the drag racer.	E	3	19	19	3	34	19	4.06	1.54
	C		15	12	21	26	26	3.81	1.52
8. It is helpful (would have been helpful) to look at an example or prototype.	E	7		3	27	40	23	4.63	1.27
	C	9	9	9	29	23	23	4.75	1.29
9. Looking at an example racer improved (would have improved) our design.	E	7	17	10	23	30	13	3.93	1.51
	C	9	3	3	26	40	20	4.88	1.02
10. Looking at the other teams' racers improved our design.	E	20	23	17	17	17	7	3.07	1.60
	C	14	6	14	26	26	14	3.63	1.36
11. Looking at an example racer decreased (would have decreased) the need for original ideas.	E	17	23	23	23	7	7	3.00	1.44
	C	9	3	14	20	23	31	4.69	1.14
12. Looking at other teams' racers decreased the need for original ideas.	E	33	33	17	7	3	7	2.33	1.45
	C	9	14	17	31	14	14	4.06	1.12

The students in both the control group and the exemplar group reported virtually identical perceptions of their knowledge of the engineering design process and their confidence in applying that process during this exercise (questions 1 and 2). It also appears that the aspects of teamwork and idea generation (questions 3 and 4) produced similar distributions with the exemplar group more strongly feeling that both the individual (mean of 4.59 compared to 3.88) and the partner (mean of 4.78 compared to 4.50) generated "many ideas."

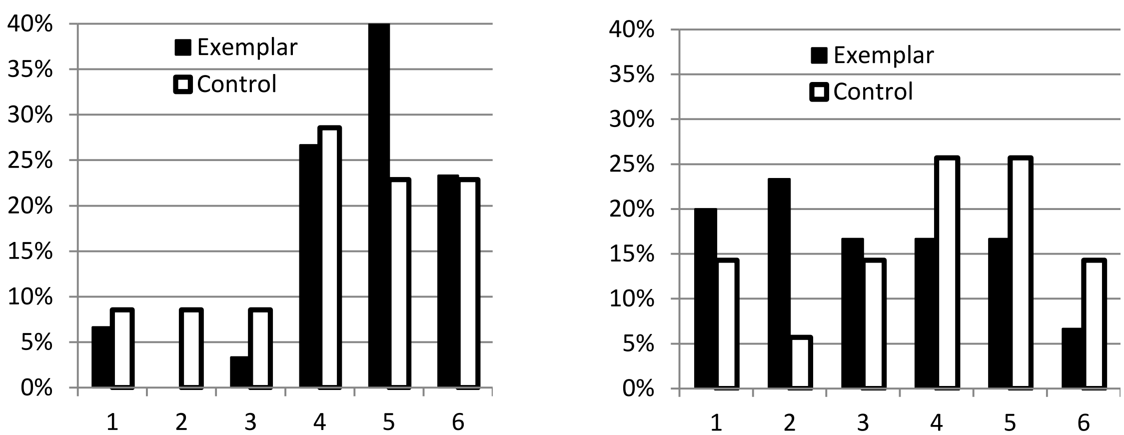
In the area of looking for outside help, almost twice the percentage of control students generally agreed that they looked at other teams' racers for help (66%) as compared to the students in the exemplar group (34%). However, exemplar students broadly reported that that they looked at the example for help (68%). A majority of the control students would have liked to look at an example (57%), but control students who provided commentary generally thought it might limit creativity: "No, [it] ruins creativity and boxes in design." Similarly, exemplar students who provided commentary indicated minor impact on the design: "No, we were pretty original." The response distributions for those two questions (6 and 5) are shown in Figure 2.



(a) (b)

Figure 2. Obtaining help from other sources:
(a) From an example racer
(b) From other teams

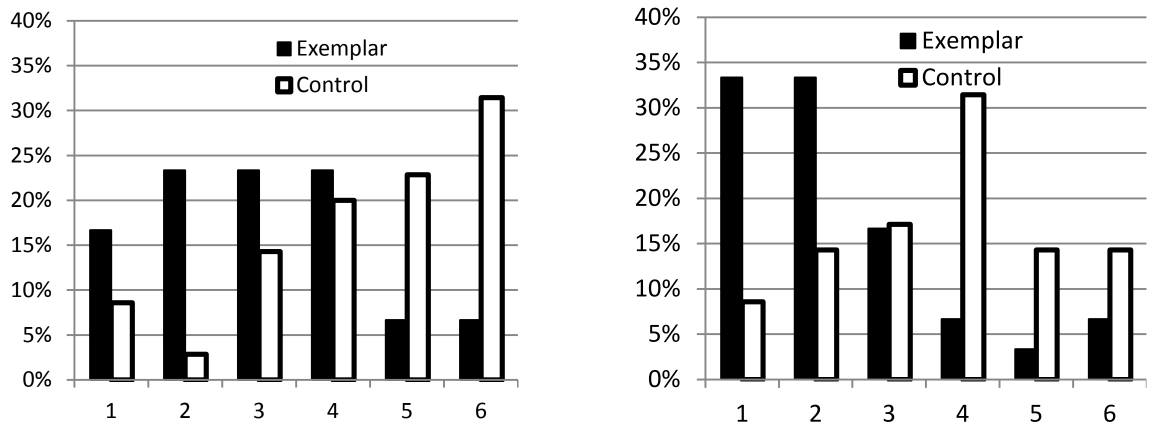
Both groups considered that an example would be helpful in design improvement with the control group feeling that it would be somewhat more helpful than those who actually had the example: “We would have known what to do faster” (control); “it sparks ideas even if they are not similar” (exemplar). On the other hand, the control group leaned more heavily on other teams’ racers for help in design improvement than the exemplar group. It is interesting to note that 67% of the exemplar students generally found the example helpful while 66% of the control students generally sought help from the other teams’ racers. The response distributions for those two questions (8 and 10) are shown in Figure 3.



(a) (b)

Figure 3. Sources for design improvement:
(a) Example racer
(b) Other teams

The final two questions dealt with whether the example racer or the presence of other teams’ racers reduced the need for originality. Here the exemplar students distinctly felt that either type of outside influence did not decrease the need for original ideas: 84% generally disagreed that other teams' racers reduced the need and 63% generally disagreed that the example racer reduced the need: "Maybe, still need to build and think of our own ideas." The control students, with only the other teams' racers present, seemed to think examples distinctly reduced the need for originality: 74% generally agreed that an example would have reduced the need for originality and 60% generally agreed that the other racers reduced the need. The response distributions for those two questions (11 and 12) are shown in Figure 3.



(a) (b)

Figure 4. Decreased need for original ideas due to:
(a) Example racer
(b) Other teams

As a final note, both groups were asked the same question: "I prefer to come up with my own ideas for the design of the drag racer" (7). Here more of the control students generally (74%) preferred their own ingenuity than the exemplar students (59%): "I like creating my own design" (control) and "We looked at examples then made changes" (exemplar). It is also interesting to note that the exemplar student responses are distinctly bimodal and the control student responses weakly bimodal. While this statement solicited the strongest bimodality, weaker bimodality is present in several other exemplar group responses: bimodality is essentially nonexistent in the other control group responses. With limited data, it is not possible to determine whether the presence of a prototype exemplar is the source of this difference in response statistics. The distribution of scores for this question on sources of ideas is shown in Figure 5.

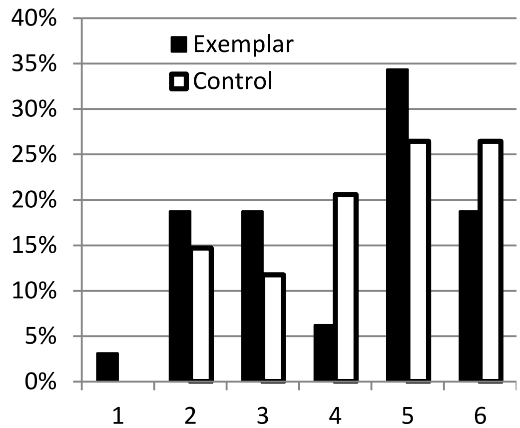


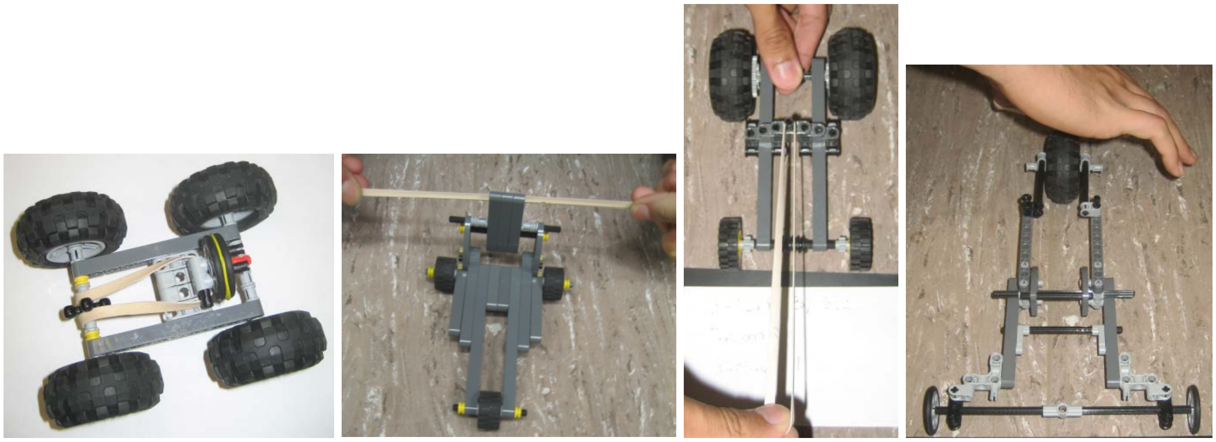
Figure 5. Preference to use own ideas

B. Analysis of photographic evidence

In the first control section, there is no restriction on how students could use the rubber band to move the Lego vehicle forward. As a result, all groups within this section ended up using the rubber band as a launching mechanism, although the launching method varied from one group to another. With this launching method, the performance of the vehicles (i.e. travel distance) depended heavily on the consistency on the human launcher, proving to be an ineffective and unreliable method for the design product. For the second control section, students were not allowed to use the rubber band launch their vehicles. This restriction had forced students to consider different tension-release methods to accelerate their Lego vehicle.

Beside the similarity in the use of rubber band to accelerate the Lego vehicles in one control section, there seems to be no other major design similarity within the same lab section. In fact, different groups from different lab sections developed very similar designs for their vehicles, with some variation in the launching mechanism of the vehicles. This is rather surprising as less than 5% of our freshman student population has worked with Lego NXT robotic kit prior to taking this Introduction to Engineering class. However, this result indicates that our students are fairly creative and value the originality of their vehicle design.

It was observed that the control groups tended to come up with less complex designs and used fewer Lego components for their vehicles compared to the exemplar groups (see Figures 6-7). However, there is not a significant discrepancy in the level of creativity and vehicle performance between the control and exemplar groups.



Figures 6. Control group examples

Figure 7 Exemplar group examples

For the groups who were provided with the exemplar vehicle, 34.5% of the groups developed very similar design to the exemplar, whereas none of the control groups came up with a design that is similar to the exemplar. Specifically, 55.2% of the exemplar groups used some form of gear assembly as an acceleration boost for their vehicles (as shown in the exemplar, Figure 1) compared to 17.6% of the control groups did. In addition, the majority of the exemplar groups used the exact same winding/unwinding method to accelerate their vehicles.

IV. Summary and Conclusions

Design contamination is studied in five sections of a freshman Introduction to Engineering course in the fall 2011 semester. Teams of two students designed and built a rubber band powered racer after an initial lecture on the engineering design process in the previous week. Students in three laboratory sections were provided an example solution, while the remaining two sections formed the control group.

In order to gain a more quantitative understanding of design contamination, students were asked to complete a short survey at the end of the laboratory meeting. Two different survey instruments were developed for the exemplar and control sections of the class.

The survey data showed that the students in both exemplar and control groups had similar knowledge about and confidence in using the engineering design process and had similar group dynamics concerning the generation of design ideas. Both groups strongly sought outside sources for ideas with the control group seeing the prospective presence of an example more desirable and helpful than the exemplar found it to actually be. Similarly, the control group reported outside sources, either from other teams or from the prospect of an example, to decrease the need for original ideas, while the exemplar group reported the opposite opinion that outside sources did not decrease the need for original ideas.

Both groups reported a general preference with coming up with their own design ideas, with the control group having a stronger preference. However, in both cases the data shows bimodality with the exemplar group strongly bimodal and the control group less bimodal.

Student comments that accompanied the questions on the survey instrument seemed to indicate that the students in the control group viewed the prospect of having an exemplar as valuable so far as a jump-start means to the end but seemed to also feel that an exemplar could be damaging to creativity. Comments from the exemplar group tended to also recognize the value of the exemplar but did not seem to note that having the exemplar could be linked to decreased team creativity.

One thing that was clear from observation of the racers was that in those sections without the exemplar, the students designs (as observed at the end of the first round) were more varied but were also generally of lower quality than for those sections in which the students had the chance to see an exemplar. At the time of the second round, student work was more unified suggesting that students viewed the work of their peers as a form of exemplar leading to greater uniformity and higher quality design.

Based on the results of our study, there seems to be no value added to student's learning and creativity when an exemplar is provided in an engineering design project where students are allowed multiple design revisions. The exemplar leads to better and more sophisticated first round designs. These early designs show less breadth and variability indicating that providing students with an exemplar seems to initially contaminate the designs. An alternative to providing an exemplar might be for the instructor to offer informational commentary at the beginning of the lab so as to provide more explanation of different Lego components in the NXT robotic kit that students can use for their vehicle. Different subassemblies (e.g. gears) could be introduced and demonstrated to show how (generally) they could be used to improve vehicle performance. This is especially helpful when the majority of students had never used the robotics kit before. Imposing the restriction on how the rubber band can be used to accelerate the Lego vehicle (i.e. not used as a launching mechanism) will force students to be more creative in their design and think more on how they can apply engineering principles to make the product work efficiently and consistently.

Appendix A. Student Commentary

In addition to responsive numerical scoring, students were encouraged to add comment to each question in the survey instrument. Selected comments were included in the analysis of survey-based data: Section II.A. A summary of student comments follows:

Students from the control group responded in a variety of ways to the statement "I would like to have an exemplar racer for help". Although numerically students indicated that they would have liked to have had an exemplar, many recognized that an exemplar might alter creativity. Typical responses included:

> "We didn't really need an example"
> "It would be nice but I wouldn't have been as creative."
> "No, it was better to do it on our own."
> "I like making my own ideas."
> "With an example racer, it wouldn't have been as fun."
> "No, [it] ruins creativity and boxes in design."
> "Yes" (Three responses)

The corresponding statement to the exemplar group, "We looked at the example racer for help" yielded an indication that students liked the exemplar but believed that they owned the creativity of their team. Typical responses included:

> "We did look at the model for help."
> "We briefly saw it."
> "A little but the majority of [the] design [was] different."
> "No we were pretty original."
> "We really didn't."
> "Yes" or "True" (Multiple)

Students in the control group were given the statement "An example of a prototype to look at would have been helpful." Typical responses included:

> "Yes, that could have helped but then it would not have been our own ideas."
> "We would have known what to do faster."
> "No"
> "Helpful yes, but then most would have copied it taking away from creativity."
> "Yes and no. Maybe in the competition but not in the fun of building the vehicle."
> "Very"

"Yes" (Multiple)

The exemplar group was given the statement "It is helpful to look at an exemplar or prototype." Responses included:

"It was very helpful."

"True – it sparks ideas even if they are not similar."

"Yes" (Multiple)

Both groups seemed to recognize the value of the exemplar but the control group seemed more hesitant to accept the exemplar without feeling a loss of team creativity. The exemplar groups were definitely more positive.

The control group was given the statement "Having an example to look at would have improved our design." Typical responses included:

"It would have given us a good starting point."

"Yes" (Multiple)

"Possibly" (Multiple)

The corresponding statement to the exemplar group, "Looking at an example racer improved our design" met with the following typical responses:

"It really helped to observe others."

"No"

"Yes" or "True" (Multiple)

Both groups definitely recognized that an exemplar brought added value to the end product.

When the control group was confronted with statements that queried the value of looking at the work of other teams, they responded:

"We didn't take anything from others"

"Didn't look"

"Yes" (Multiple)

(Multiple groups provided specific examples of specific design improvements/ideas that came from observing other teams.)

When the exemplar group was confronted with statements that queried the value of looking at the work of other teams, they responded:

"We didn't look for other answers."

"We looked at the example then one racer in the first run."

"Slightly true – based on whose went farthest, we could see the best characteristics."

"Yes"

"No" (Multiple)

(Multiple groups provided specific examples of specific design improvements/ideas that came from observing other teams.)

Both groups were confronted with the statement; "I prefer to come up with my own ideas for the design of the drag racer." The control group offered the following comments:

"I like creating my own design."

"Yes as long as I have a general idea what to do."

"Yes, then it is truly my own."

"I need help."

"Somewhat"

"Yes"

The exemplar groups responded with:

"We based on the model but also with [our] own ideas."
"We looked at examples then made changes."
"Somewhat."
"Yes" (Multiple)

Statements that queried the students as to how looking at an exemplar or another other team's design would reduce the need for original ideas were met with the following responses from the control group:

"Yes, but original ideas are the best though it may not be as effective."
"Possibly but I did not look."
"May have hindered our efforts to come up with something unique."
"Didn't look at others – I mean copy anything."
"Yes" (Multiple)

The exemplar group responded:

"Yes and no – it helps spark original ideas, but the thoughts originality is decreased."
"Maybe, still need to build and think of our own ideas."
Yes (referring to the exemplar) and No (referring to the other teams.)
No

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